

REMARKSAmendments

In the descriptive part of the specification, the status of several references has been updated and various minor errors have been corrected.

In the claims, independent claims 1, 17, and 18 have been amended by incorporating the subject matter of claims 9 to 11, and by specifying that the circuit protection device is in the form of a strap. Basis for this amendment is found in paragraph [0003] and Figures 5 to 17. Claims 9 to 11 have been canceled, and the claim dependency of claim 12 has been amended. These amendments have been made to more clearly define and recite the present invention and in the interest of rapid prosecution and without prejudice to Applicants' right to prosecute claims of similar or different scope to the unamended claims in one or more continuation applications.

The Rejection Under 35 USC § 102(b) and § 102(e)

Applicants respectfully traverse the rejection of claims 1-9, 11-13, 15, and 17 under 35 USC § 102(b) as anticipated by Oo (Japanese Patent Publication No. 5-109505), insofar as the rejection is applicable to the amended claims.

The present invention is directed to a circuit protection device in which a laminar PTC element is sandwiched between first and second electrodes. A first electrical lead comprises three sections: a first attachment portion for attachment to the first electrode, a first connection portion for connection to an electrical circuit (e.g. a battery terminal or another component), and a first barrier portion which is positioned between the first attachment and the first connection portions. The first barrier portion comprises a barrier which extends toward the second electrode and is formed in or added to the first lead before attachment to the first electrode. The barrier comprises an indentation, a notch, a raised cut-out, a wall, or a dam. This barrier serves to block weld splatter between the first connection portion and the PTC element, preventing electrical shorting of the device or damage to the PTC element. The device is in the form of a strap, and acts as both a protection device and an interconnection device, e.g. in connecting two batteries or a battery to a circuit board. In a preferred embodiment, two electrical leads, each comprising a barrier portion, are present.

Oo discloses a PTC device in which a PTC element is in contact with metal plates 12, which are then attached to metal leads 13. A polyethylene naphthalate resin then coats the

entire device except for the ends of the metal leads (which are left free for connection to a substrate, e.g. a battery). As shown in Figure 5, one of the two metal leads which is in contact with the "top" side of the device is bent so as to allow connection on the same plane as the "bottom" lead. Clearly this bend is not an indentation, a notch, a raised cut-out, a wall, or a dam. Furthermore, the resin does not constitute a barrier as recited in the claims as it is not formed or added to the first lead before attachment to a first electrode.

Applicants respectfully traverse the rejection of claims 1-13, 15, and 17 under 35 USC § 102(b and e) as anticipated by Kitamoto et al. (U.S. Patent No. 6,114,942; International Publication No. WO97/06538), insofar as the rejection is applicable to the amended claims.

Kitamoto discloses a disc-shaped PTC element intended for direct positioning over the button terminal of a battery. This is clearly is not a strap device, which, as described on page 1, line 32 to page 2, line 2 of the specification, has first and second electrical leads which extend from opposite ends of the chip so that one end can be electrically connected to a battery cell and the other to another component. Although Kitamoto does show second conductive lead 18 which is composed of first part 19 and second part 21, separated by a bend, this bend is not a an indentation, a notch, a raised cut-out, a wall, or a dam. (Although the Examiner refers to a "cutout" in Figure 4, such removal of material is clearly not a "raised cut-out" as is recited in the claims.)

Applicants respectfully traverse the rejection of claims 1-12, 17, and 18 under 35 USC § 102(b and e) as anticipated by Chandler et al. (U.S. Patent No. 5,856,773), insofar as the rejection is applicable to the amended claims.

Chandler, like Kitamoto, discloses a disc-shaped PTC element intended for direct positioning over the button terminal of a battery (see column 4, lines 4-13, which describe an outer periphery and an inner periphery defining a first opening in the PTC element). Such a disc part is not a strap device.

Applicants respectfully traverse the rejection of claims 1-4, 11, and 12 under 35 USC § 102(b) as anticipated by Fellner et al. (U.S. Patent No. 5,142,267), insofar as the rejection is applicable to the amended claims.

Fellner discloses a sensor comprising a PTC element sandwiched between two aluminum layers to which are welded leads. The entire device, including some of each lead, is encapsulated with a glass sheath. Fellner's device is not a strap device; and the leads do

not contain a barrier. The Examiner has indicated that glass sheath 19 constitutes a barrier, but it is clearly not formed in or added to the first lead before attachment to the first electrode and does not comprise an indentation, notch, raised cut-out, wall, or dam as part of the lead.

The Rejection Under 35 USC § 103(a)

Applicants respectfully traverse the rejection of claim 18 under 35 USC § 103(a) as unpatentable over Oo (Japanese Patent Publication No. 5-109505) in view of Kitamoto et al. (U.S. Patent No. 6,114,942) or Chandler et al. (U.S. Patent No. 5,856,773), insofar as the rejection is applicable to the amended claims.

Claim 18 is directed to a battery assembly in which a circuit protection device in the form of a strap and comprising a first lead having a first barrier portion and a first connection portion is welded to a terminal of a battery. The Examiner indicates that Oo does not disclose welding, and relies on either Kitamoto and Chandler for this disclosure. Applicants believe one of ordinary skill in the art who read Oo would not look to either Kitamoto or Chandler, both of which explicitly teach the importance of positioning a PTC device on top of a button terminal of a battery, not in using a strap device. However, even if one were to combine Oo with either Kitamoto or Chandler, the result would not be the present invention, as none of the documents teaches or suggests the importance and advantages of having a barrier in the form of an indentation, a notch, a raised cut-out, a wall, or a dam to prevent weld splatter.

Applicants respectfully traverse the rejection of claims 14 and 16 under 35 USC § 103(a) as unpatentable over Oo (Japanese Patent Publication No. 5-109505) or Kitamoto et al. (U.S. Patent No. 6,114,942) in view of Banich et al. (U.S. Patent No. 6,104,587), insofar as the rejection is applicable to the amended claims.

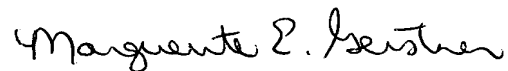
Claims 14 and 16 are directed to the use of a tape as an insulating layer. Neither Oo nor Kitamoto discloses the use of a tape. Banich discloses a device in which a conductive polymer resistive element is attached to first and second metal foil electrodes having a thickness of at least 0.060 mm. Electrical leads can be attached to the metal foil electrodes. The resistive element and the first and second electrodes can then be insulated by any suitable method, e.g. by use of a polymer insulating material or a tape. The Examiner contends that it would be obvious to replace the insulation taught by Oo and Kitamoto by the tape of Banich. However, it is Applicants' position that it would not be obvious for one skilled in the art who read either Oo or Kitamoto to want to replace the specified insulating layer (i.e. the polyethylene naphthalate resin of Oo or the polymer of Kitamoto) by a tape. In fact, a tape

would not allow good coverage of the relatively complicated structure of Kitamoto's device (including the need to completely cover the inner periphery and preferably the outer periphery of the device) and would probably not provide the desired elements (i.e. good thermal resistance, good thermal shock resistance, and good mechanical/physical properties) specified for the resin of Oo.

Conclusion

It is believed that this application is now in condition for allowance and such action at an early date is earnestly requested. If, however, there are any outstanding issues which can be usefully discussed by telephone, the Examiner is asked to call the undersigned.

Respectfully submitted,



Marguerite E. Gerstner  
Registration No. 32,695  
Telephone (650) 361-2483